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TRITURUS DOBROGICUS (KIRITZESCU, 1903) IN CARAŞ SEVERIN COUNTY: STATUS AND CONSERVATION IMPLICATIONS

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Abstract. *Triturus dobrogicus* is signalled in a premier in Caraş Severin County in Caraş Depression. The species occupies a wet area near Iam locality, which is situated near the border with Serbia. *T. dobrogicus* is present at 89 m altitude in an area with a plain relief. The habitat is characteristic to the species, several amphibian species being identified together with the crested newts: *Lissotriton vulgaris, Bombina bombina* and *Rana dalmatina*. The survival of *T. dobrogicus* in the region is possible due to the existence of an adequate terrestrial habitat and to the fact that the aquatic habitat is not polluted. The measures that must be taken in order to assure its survival are discussed.

Key words: *T. dobrogicus*, status, conservation, Caras Severin, premier

1. INTRODUCTION

Triturus dobrogicus is the species that has the smallest distribution area within the superspecies *Triturus cristatus* (Arntzen et al., 1997). *T. dobrogicus* is endemic in the lower areas from the middle and inferior Danube course. Its area is separated in a western part (Pannonian) and an eastern one (Dobrudjan) (Arntzen et al., 2007), which seem to be completely separated at the level of the Danube Gorge from The Iron Gates (Arntzen et al., 1997). The two areas are populated by two different *T. dobrogicus* subspecies (Litvinchuk & Borkin, 2000). At an European level, the species is considered to be endangered and vulnerable. In Romania it is also regarded as endangered (Iftime, 2005). In accordance with the Romanian conservation legislation, it is a species that requires the delimitation of special conservation areas (O.U.G. 57/2007). In Romania, there are few data regarding the distribution area of *T. dobrogicus*, new studies being necessary (Sos, 2008). The reduced level of information is a consequence of its recent recognition as a species, thus probably some localities which referred to *T. cristatus*, actually refer to both species of crested newts (Sos, 2008). Articles that do not differentiate the two crested newt species, and unite them in the *T. cristatus* complex, have appeared even in the past few years in Romania (Ghira et al., 2002). In the amphibian monograph from Romania, *T. dobrogicus* is separately treated, however only 34 distribution localities are indicated (Cogălniceanu et al., 2000). More important contributions regarding the distribution of the species in Romania appear only in the last years. These concern both the populations situated eastwards of the Carpathians (Covaciu-Marcov et al., 2006a, 2009a, Strugariu & Gherghel, 2008, Gherghel & Iftime, 2009), and the Pannonian ones (Covaciu-Marcov et al., 2006b, 2007, 2008, 2009 b). Although these data expand the knowledge regarding the geographic distribution of the species in Romania, some areas have remained incompletely investigated. Thus, the present study signals the species in a new region from the country, contributing to the highlighting of its distribution in Romania.

2. MATERIAL AND METHODS

The study was realised in the spring of 2009, at the end of March and the beginning of April.

During this interval, several areas from the south-western part of Caraş-Severin County were investigated. The newts were captured using some nets, which were set on round metallic frames. We also used a squared dredger in the water, entering the water in rubber boots. All of the captured animals were released in their habitat of origin, after being determined. The determination of the crested newt species was realised using the chromatic and morphologic characters indicated in the scientific literature and recently used by other authors, mainly on the grounds of the Wolterstorff index (Fuhn, 1960, Cogălniceanu et al., 2000, Gherghel & Iftime, 2009). The most characteristic individuals were photographed before being released. We also photographed the specific habitats from the area.

3. RESULTS AND DISCUSSIONS

T. dobrogicus was identified in only one locality at Iam, in the extreme west of Caraş Severin County, near the border with Serbia (figure 1).

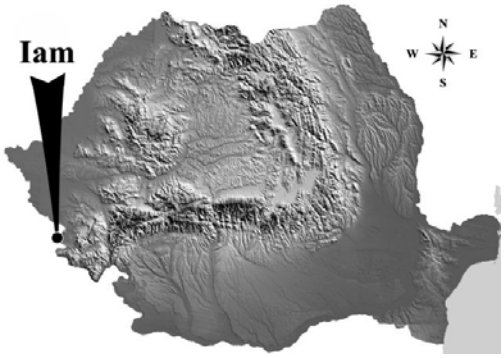

Figure 1. The localization of the *T. dobrogicus* population from Iam

The occupied habitat is present on a swampy area that covers a surface of several tens of m², formed at the level of a canal. During spring, it floods the neighbouring grounds. The water surface is variable, being wide in the springtime, while at the end of July it is completely dried up. During spring, when the area is the widest, the water depth reaches 1 m, while during the whole year it has only 30-50 cm. The wet area is situated between the railroad and the country road that lead from Berlişte to Iam (figure 2.).

The habitat is situated at an altitude of 89 m. This is in concordance with the altitude at which the species is found in western Romania, where it does not usually surpass 150 m (Covaciu-Marcov et al., 2006b, 2007). An important fact is that the relief is plane in the area, this being a necessary requirement for the species, as the altitude one (Covaciu-Marcov et al., 2008). Practically, a plain gulf, insinuated alongside Caraş River, lies in the area, being bordered on both sides by a higher and more uneven relief. From a geomorphic point of view, the area represents the Depression of Caraş (Posea & Badea, 1984). *T. dobrogicus* was not observed further east, although we have investigated other habitats. Nevertheless, at 20 km eastwards hybrid populations are already present and afterwards only populations belonging to the sister species, *T. cristatus* (Covaciu-Marcov et al., 2005). This is a result of the fact that the plane relief is gradually replaced by higher units, characteristic to *T. cristatus*. Thus, the region favourable for the species has a maximum length of 15 km and an approximate width of 5 km in Caraş Depression.

Figure 2. Aspect of *Triturus dobrogicus* habitat

Presently, the *T. dobrogicus* population from Iam is the one from western Romania that is the most closest to the ones eastwards of the Danube Gorge. Between Iam and the recently signalled populations from Mehedinți County (Covaciu-Marcov et al., 2009a) there are approximately 150 km in a straight line. The distance was even smaller in the past, but it grew together with the disappearance of the population from Ada Kaleh Island (Fuhn, 1970, 1975) due to the building of the Iron Gates dam. This distance is not very likely to be reduced in the future, as a result of the lack of the species from the Danube Gorge, where the relief represents a barrier for this plain species. Moreover, it seems that the crested newts totally lack from the Danube Gorge, due to the absence of the reproduction habitats (Covaciu-Marcov et al., 2009a).

Although identified in only one locality, *T. dobrogicus* seems to be well represented at Iam, the population appearing to be large. Thus, after we dredged the water for about 20 times, we captured 9 individuals. The number is probably much larger due to the relatively large surface occupied by the wet area. We captured males (figure 3), females and juveniles, which indicates that the population was

reproductively successful in the previous years. A factor that probably advantages the population is the lack of fish from the habitat. Generally amphibians avoid habitats with fish (Hartel & Őllerer, 2009), which feed on their larvae. During the study, other amphibian species were also present in the habitat together with *T. dobrogicus*, respectively *Lissotriton vulgaris, Bombina bombina* and *Rana dalmatina*. From these, *Bombina bombina* was the most numerous, situation which seems to be a general one in the areas in which the two species appear together (Arntzen et al., 1997).

Figure 3. *T. dobrogicus* individual captured at Iam

The anthropogenic impact from the region is presently extremely reduced. This is due to the relative isolation of the region, which is a purely rural area, with a traditional agriculture, situated near the border. Road traffic, which generally affects the amphibians (Hartel et al., 2009) does not appear to have any impact, the only road from the area, which is a difficult, country road, is poorly circulated. However, the impact was real in the past, being represented by the transformation of most of the grounds in agricultural fields. Moreover, the construction of the road and of the railroad fragmented and modified the habitats. The railroad practically crosses the habitat of *T. dobrogicus*. Despite these past threats, the most problematic issue is the reduced territory occupied by the terrestrial habitat available to the *T. dobrogicus* population. Therefore, we probably encountered the species only at Iam, because the other investigated habitats were only represented by ditches on the road margins, where although the aquatic habitat was acceptable, the terrestrial one was very limited or completely lacked. The smaller newt was present in these canals (*Lissotriton vulgaris*), but a species of the size of *T. dobrogicus* cannot survive without a proper terrestrial habitat. A situation and a similar explanation were previously recorded in Mehedinți (Covaciu-Marcov et al., 2009a). Near the habitat from Iam, there are areas with spontaneous vegetation where the newts can withdraw after laying their eggs. In addition, rows of vegetation are present on the margin of a canal and even greater amounts are found alongside the railroad. The newts can carry on their terrestrial activities in these areas. Recent research has proved the special importance of the terrestrial habitats for the amphibians, local populations not being able to survive in the absence of some terrestrial habitats situated near of the aquatic ones (Porej et al., 2004). The wet areas and the neighbouring terrestrial ones must be considered as a single ecological unit (Semlitsch, 2000). *T. dobrogicus* is probably missing from the other sectors investigated in Caraş Depression because of the lack of a terrestrial habitat. Therefore, the conservation of the habitat, both terrestrial and aquatic, populated by *T. dobrogicus* becomes imperative. This area comprises most of the region situated between the railroad and the road as well as the areas found south of the railroad, until it reaches the border with Serbia. This fact is possible mainly because the respective grounds have a low economic value and are presently not cultivated. This case should be born in mind, because *T. dobrogicus* is an endangered species in Romania, and its conservation requires the delimitation of certain special protection areas (O.U.G. 57/2007). In this manner, the survival of the only population of this species known until now in Caraş Severin County, may be assured.

4. CONCLUSIONS

We identified *T. dobrogicus* species in a premier for Caraş Depression, near Iam locality from Caraş Severin County. The habitat lies at 89 m altitude, being represented by a relatively wide wet area. The identification of the species in the region has a distinct conservative value, *T. dobrogicus* being an endangered species in Romania. The determination of the species in new territories and in slightly polluted habitats increases the chances of survival of the populations from the margin of the distribution area. Presently, the survival of this species in this area is assured by the existence of a terrestrial habitat situated near the aquatic one. Moreover the aquatic habitat is favourable, not being affected by pollution. Thus, the habitat must be preserved in the present state.

REFERENCES

Arntzen, J. W., Butger, R. J. F., Cogălniceanu, D., Wallis, G. P., 1997. *The distribution and*

conservation status of the Danube crested newt, Triturus dobrogicus. Amphibia-Reptilia, 18, 133-142.

Arntzen, J. W., Esperegueira Themudo, G., Wielstra, B., 2007. *The phylogeny of crested newts (Triturus cristatus superspecies): nuclear and mitochondrial genetic characters suggest a hard polytomy, in line with the paleogeography of the centre of origin.* Contributions to Zoology, 76, 4, 261-278.

Cogălniceanu, D., Aioanei, F., Bogdan, M., 2000. *Amfibienii din România, Determinator.* Ed. Ars Docendi, Bucureşti.

Covaciu-Marcov, S.-D., Sas, I., Cicort-Lucaciu, A.-Şt., Peter, I., Bogdan, H., 2005. *Notes upon the herpetofauna of the county of Caraş - Severin, Romania.* Revue Roumaine de Biologie, serie de Biologie Animale, 49, 1-2, 47-56.

Covaciu-Marcov, S.-D., Ghira, I., Cicort-Lucaciu, A.-Şt., Sas, I., Strugariu, A., Bogdan, H. V., 2006a. *Contributions to knowledge regarding the geographical distribution of the herpetofauna of Dobrudja, Romania.* North Western Journal of Zoology, 2, 2, 88-125.

Covaciu-Marcov, S.-D., Sas, I., Kiss, A., Bogdan, H., Cicort-Lucaciu, A. Şt., 2006b. *The herpetofauna from the Teuz River hydrographic basin (Arad County, Romania).* North Western Journal of Zoology, 2, 1, 27-38.

Covaciu-Marcov, S.-D., Cicort-Lucaciu, A.-Ş., Lazăr, V., Szeibel, N., Balaj, L., 2007, *The herpetofauna of the lower hydrographical basin of Crişul Alb, the district of Arad (Romania)*. Oltenia, Studii şi Comunicări. Ştiinţele Naturii, 23, 143-147.

Covaciu-Marcov, S.-D., Bogdan, H. V., Paina, C., Toader, S., Condure, N., 2008, *The herpetofauna of the north-western region of Bihor County, Romania.* Biharean Biologist, 2, 5-13.

Covaciu-Marcov, S.-D., Cicort-Lucaciu, A.-Şt., Gaceu, O., Sas, I., Ferenţi, S., Bogdan, H. V., 2009a, *The herpetofauna of the south-western part of Mehedinţi County, Romania.* North Western Journal of Zoology, 5, 1, 142-164.

Covaciu-Marcov, S.-D., Sas, I., Cicort-Lucaciu, A.-Şt., Kovacs, E.H., Pintea, C., 2009b. *Herpetofauna of the Natural Reserves from Carei Plain: zoogeographical significance, ecology, statute and conservation.* Carpathian Journal of Earth and Environmental Sciences. 4, 1, 69-80.

Fuhn, I., 1960, "*Fauna R.P.R.", vol. XIV, Fascicola I, Amphibia.* Editura Academiei R.P.R., Bucureşti.

Fuhn, I., 1970. *Amfibii şi Reptile din zona viitorului lac de baraj de la Porţile de Fier.* Studii şi Cercetari Biologice, Seria Zoologie, 22, 4, 321-331.

Fuhn, I., 1975. *Amphibia şi Reptilia*. În: Grupul de cercetări complexe "Porţile de Fier", serie monografică, Fauna. Ed. Academiei R. S. R., 301-303.

Gherghel, I., Iftime, A., 2009. *On the presence of the Danube crested newt, Triturus dobrogicus, at Durankulak Lake, Bulgaria.* North Western Journal of Zoology, 5, 1, 209-213.

Ghira, I., Venczel, M., Covaciu-Marcov, S.-D., Mara, Gy., Ghile, P., Hartel, T., Török, Z., Farkas, L., Rácz, T., Farkas, Z., Brad, T., 2002. *Mapping of Transylvanian Herpetofauna*. Nymphaea, Folia Naturae Bihariae. 29, 145-203.

Hartel, T., Őllerer, K., 2009. *Local turnover and factors influencing the persistence of amphibians in permanent ponds from the Saxon landscape of Transylvania.* North-Western Journal of Zoology, 5, 1, 40-52.

Hartel, T., Moga, I. C., Őllerer, K., Puky, M., 2009. *Spatial and temporal distribution of amphibian road mortality with a Rana dalmatina and Bufo bufo predominance along the middle section of the Târnava Mare basin, Romania.* North-Western Journal of Zoology, 5, 1, 130-141.

Iftime, Al., 2005. *Amfibieni şi Reptile*. În: Cartea Roşie a Vertebratelor din România, editori: Botnariuc & Tatole. Ed. Acad. Române, 1-325.

Litvichuk, S. N., Borkin, L. J., 2000. *Intraspecific taxonomy and nomenclature of the Danube Crested Newt, Triturus dobrogicus.* Amphibia-Reptilia, 21: 419-430.

Porej, D., Micacchion, M., Hetherington, T. E. 2004. *Core terrestrial habitat for conservation of local populations of salamanders and wood frogs in agricultural landscapes.* Biological Conservation, 120, 3, 399-409.

Posea, G., Badea, L., 1984, *România, Harta Unităţilor de relief (Regionarea geomorfologică).* Ed. Ştiinţifică şi Enciclopedică, Bucureşti.

Semlitsch, R. D., 2000. *Principles of management of aquatic-breeding amphibians.* Journal of Wildlife Management. 64, 3, 615-631.

Sos, T. 2008. *Review of recent taxonomic and nomenclatural changes in European Amphibia and Reptilia related to Romanian herpetofauna.* Herpetologica Romanica, 2, 61-91.

Strugariu, A., Gherghel, I., 2008. *A preliminary report on the composition and distribution of the herpetofauna in the Lower Prut River Basin (Romania).* North Western Journal of Zoology, 4, Suppl. 1, S49-S69.

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